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ORIGINAL ARTICLE

Forgoing health care under universal health insurance: the case of France

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Abstract

Objectives We investigate the reliability of a survey question on forgone healthcare services for financial reasons, based on analysis of actual healthcare use over the 3-year period preceding response to the question. We compare the actual use of different health services by patients who report having forgone health care to those who do not.

Methods Based on a prospective cohort study (CONSTANCES), we link survey data from enrolled participants to the Universal Health Insurance (UHI) claims database and compare use of health services of those who report having forgone health care to controls. We present multivariable logistic regression models and assess the odds of using different health services.

Results Compared to controls, forgoing care participants had lower odds of consulting GPs (OR = 0.83; 95% CI 0.73, 0.93), especially specialists outside hospitals (gynecologists: 0.74 (0.69, 0.78); dermatologists: 0.81 (0.78–0.85); pneumologists 0.82 (0.71–0.94); dentists 0.71 (0.68, 0.75)); higher odds of ED visits (OR = 1.25; 95% CI 1.19, 1.31); and no difference in hospital admissions (OR = 1.02; 95% CI 0.97, 1.09). Participants with lower occupational status and income had higher odds of forgoing health care.

Conclusions The perception of those who report having forgone health care for financial reasons is consistent with their lower actual use of community-based ambulatory care (CBAC). While UHI may be necessary to improve healthcare access, it does not address the social factors associated with the population forgoing health care for financial reasons.

Keywords Access to care · Unmet healthcare needs · Universal Health Insurance (UHI) · Social deprivation

Introduction

Along with addressing some of the social determinants of population health, equity in access to health care has been a priority of French policymakers, yet many French residents

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continue to forgo health services (Marmot and Bobak 2000; Dourgnon et al. 2012; French National Health Insurance Administration 2016; Institut de Recherche et Documentation en Economie de la Santé 2014). France provides Universal Health Insurance (UHI) for its population under a system that reimburses physicians in private practice on the basis of a national fee schedule. In contrast to Germany and Canada, however, the French health system relies on significant coinsurance payments (Chevreul et al. 2015; Nay et al. 2016; Rodwin 2003). Personal health expenditure is financed mostly by compulsory UHI (79%) which covers almost all of the population (Chevreul et al. 2015; Sécurité sociale 2018). Reimbursement rates for services range from 30 to 100% of the statutory tariff for each procedure (outpatient services, medications and medical devices). These tariffs are set by national agreements among physicians' trade unions and the UHI Fund. The remaining 21% of health expenditures are financed by a system of private and/or public complementary health insurance (*couverture médicale universelle complémentaire,* CMU-c) for 14%, and out-of-pocket (OOP) payments accounting for 7% of total health expenditure (Haute Autorité de Santé 2019).

Over the last decade, policymakers in France have increased the extent of cost sharing (French National Health Insurance Administration 2016; Chevreul et al. 2015). The relative magnitude of OOP payments depends on four factors: (1) the extent to which patients consult physicians who accept the negotiated tariffs as payment in full; (2) the extent to which patients consult physicians who are authorized to extra-bill beyond the negotiated tariffs; (3) the extent to which patients are responsible for hospital copayments; and (4) the extent to which complementary health insurers cover a portion of these payments. Most health professionals apply the statutory tariffs, but 10% of GPs and 45% of specialists (62% of gynecologists, 59% of ophthalmologists) may extra-bill beyond these negotiated rates (Mackenbach et al. 2008). Coverage of OOP payments varies greatly depending on the immense diversity of complementary insurance policies. For French residents with low incomes covered under CMU-c—8% of the population—there are no coinsurance payments for physicians who accept the statutory tariffs as payment in full (Chevreul et al. 2015). Nor are there any copayments for daily hospital charges, but CMU-c does not cover OOP payments due to extra-billing.

There are, of course, many access barriers to health care, which can affect patients' health status due to disease that was not detected, prevented or treated in its early stages (Guessous et al. 2012; Piette et al. 2004; Ayanian et al. 2000). Likewise, financial barriers to medication use are also linked to an increased risk of complications and hospitalizations (Guessous et al. 2012; Tuppin et al. 2011; Heisler et al. 2010; Allin et al. 2010; Weissman et al. 1991). Reports of forgone health care are often used as a proxy for unmet needs whether due to financial or other barriers, e.g., geographic distance, language, level of education or system responsiveness (Dourgnon et al. 2012; Ayanian et al. 2000; Bazin et al. 2005; Auvray et al. 2001). However, forgoing health care remains mostly a reported outcome and so far as we know has not been compared to actual health services use (Guessous et al. 2012; Bodenmann et al. 2014). In this paper, we document and compare actual use of health services by patients who report having forgone health care for financial reasons to those who do not.

Methods

Data sources

CONSTANCES Our data on participants who report having forgone health care are from a French population-based cohort study designed as a randomly selected sample of adults aged 18–69 years (http://www.constances.fr/) (Zins et al. 2015). Beginning in 2012, participants were enrolled in one of 21 health screening centers (heretofore referred to as inclusion centers) which are managed by the Caisse Nationale d'Assurance Maladie (CNAM), the largest fund of France's UHI system covering 91% of the population. CONSTANCES reached its target population of 200,000 study participants in 2019. For each participant surveyed upon inclusion in the cohort, and invited for a comprehensive health examination, data were collected on demographic, socioeconomic and health characteristics. Participants completed self-administered questionnaires including information on lifestyle, health status, physical limitations and social characteristics. Forgoing health care for financial reasons was reported based on the following question: "During the last 12 months, did you forgo any medical care for you or your partner for financial reasons?" Participants answered "yes" or "no."

Health characteristics of participants are derived from the health examination, based on standard protocols including participants' clinical and family history recorded by a physician, as well as from the UHI administrative database (Ruiz et al. 2016). Smoking status and other health behaviors are also recorded. Patients are considered as presenting cardiovascular disease (CAD) risk when dyslipidemia, diabetes or hypertension is reported, diagnosed by a physician at the health inclusion center or recorded in the UHI database. CAD history includes information on stroke, ischemic cardiopathy events or cardiovascular diseases. Respiratory disease history

includes information on asthma or chronic obstructive pulmonary disease (COPD).

UHI's claims database (Système national des données de santé—SNDS) This administrative database includes all medical procedures, medications, imaging, outpatient visits and inpatient admissions reimbursed under UHI. Individual participants enrolled in CONSTANCES were linked to SNDS to retrieve their actual health service utilization over the 3-year period prior to their inclusion. This process is done in a second step, takes several months to complete and unfortunately results in some missing data (see below). We also extracted data on individuals covered under the CMU-c. All these data cover the period January 1, 2010–December 31, 2016.

Definitions Socioeconomic characteristics of participants include age, gender, occupational status, household composition and living conditions. We define our "socially disadvantaged" category as having at least one problem among the following: difficulties with reading, writing or arithmetic, meeting with a social worker in the last year, or having no internet access.

For each participant who completed the survey, we sought to obtain their actual use of health services, as recorded in the SNDS database, over the 3-year period preceding inclusion in the study. We include all physician visits in CBAC outside of hospitals, all ED visits without hospital admission and all hospital admissions over the 3-year period preceding cohort enrollment. We did not include the frequency of visits in CBAC by specialty or category of healthcare use (ED or hospital admission). Our aim is to differentiate those who used health care from those who did not.

Enrolled population and missing data (MD) As of October, 2018, 142,995 participants were enrolled in CONSTANCES of which 89,537 were successfully linked to SNDS. Individual socioeconomic status and available health characteristics of participants linked to SNDS were compared to those for whom linkage was not available yet (Online Resource 1). Participants with missing data (MD) on forgoing health care (1628) were also excluded. Our final sample includes 87,909 participants (Fig. 1). We also compared individual socioeconomic status and health characteristics of included and excluded participants (Online Resource 2).

Endpoints

Our main objective is to investigate the reliability of the survey question on forgone health care, based on analysis of actual use of health care. Our secondary objective is to compare participants reporting to have forgone health care to those who did not in terms of socioeconomic and health characteristics. Our first endpoint is to estimate the odds of healthcare use (physician visits, ED visits, hospital admissions) over the 3-year period preceding cohort enrollment for participants reporting to have forgone health care and those who did not. Our secondary endpoints are to assess rates of socioeconomic and health characteristics in both groups.

Statistical analysis

Descriptive statistics are presented as mean ± SD if normally distributed and as median [interquartile range (IQR)] when appropriate. Categorical data are presented as numbers and percentages. When comparing participants who report having forgone health care to their counterparts, we relied on student *t* tests for continuous data and Chi-square tests for categorical data.

We relied on multivariable logistic models to estimate odds ratios (OR) and their 95% confidence interval (CI) of physician visit rates, ED visit rates and hospital admission rates of participants who report having forgone care. Rates of participants who did not report having forgone health care serve as the reference. We adjusted for potential a priori confounding factors based on well-known determinants of healthcare use: age, gender, health characteristics (CAD history, CAD risk factors, respiratory disease history, smoking status, alcohol use, body mass index, history of depression, activity limitations due to health problems), social disadvantage as defined earlier (occupational status, CMU-c coverage) and geographic location measured by the population size of the cities in which the inclusion centers are located. We also performed a multivariable logistic regression to test the association between the reporting of forgone health care and well-known determinants of healthcare use. Our analyses used Stata version 14.0 (StatCorp Ltd, College Station, USA).

We follow the STROBE recommendations for reporting observational cohort studies (von Elm et al. 2007). The CONSTANCES study was approved by the *Comité Consultatif pour le Traitement des Informations Relatives à la Santé* (CCTIRS) and the *Commission Nationale Informatique et Liberté* (CNIL). All participants signed an informed consent form.

Results

Actual healthcare use

Among our final sample of enrolled participants (Fig. 1), 12,363 (14.1%) report having forgone health care for financial reasons.

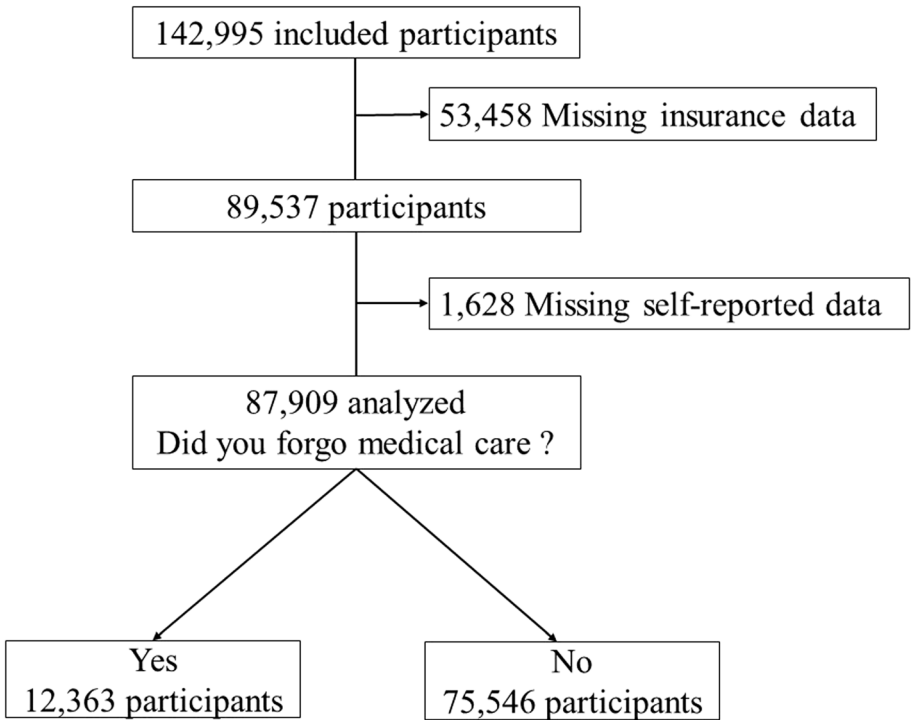

Fig. 1 Participants in the CONSTANCES study: flow diagram, CONSTANCES study, France, 2016

Based on our multivariable logistic regression analysis, we find that forgoing participants, compared to their counterparts, have lower odds of visiting GPs and specialist physicians, with the exception of psychiatrists, (Table 1).

Table 1 Multivariable logistic regression results for physician visit rates of participants who report having forgone health care and their counterparts, CONSTANCES study, France, 2016

	Odds ratios	
	OR	CI (95%)*
General practitioner	0.83	0.73–0.93
Dentist	0.71	0.68–0.75
Dermatologist	0.81	0.78–0.85
Ophthalmologist	0.85	0.82–0.89
Gynecologist[a]	0.74	0.69–0.78
ENT	0.95	0.88–1.02
Psychiatrist	1.03	0.96–1.12
Pneumologist	0.82	0.71–0.94
Rheumatologist	0.95	0.89–1.03
Orthopedist	0.85	0.79–0.91
Cardiologist	0.94	0.87–1.01
Gastroenterologist	0.94	0.88–1.01
ED	1.25	1.19–1.31
Hospital admission	1.02	0.97–1.09

ENT eye–nose–throat specialist, *ED* emergency department

*95% confidence intervals (CI)

[a]Assessed only in the female population

The odds ratio for consulting a GP is 0.83 (95% CI 0.73, 0.93); for dentists 0.71 (95% CI 0.68, 0.75); and for gynecologists 0.74 (95% CI 0.69, 0.78). In contrast, forgoing participants have higher odds of visiting an ED (without inpatient admission) compared to their counterparts (1.25; 95% CI 1.19, 1.31). There is no difference among these groups with regard to hospital admissions (1.03; 95% CI 0.97, 1.09).

Characteristics of participants having forgone health care

Socioeconomic characteristics Low household income and occupational status are associated with reporting forgone health care (Table 2). The occupational status distribution is different between participants reporting to have forgone health care and those who do not (14.2% vs. 31.4% of managers, $P < 0.001$ and 13.2% vs. 8.3% of manual laborers, $P < 0.001$). The proportion of participants with monthly household income less than 1000 € who report having forgone health care is more than three times that of their counterparts (10.8% vs. 3.0% $P < 0.001$). Likewise, the proportion of socially disadvantaged participants is higher in the forgoing care group (21.4% vs. 7.6%, $P < 0.001$) and 7.5% of forgoing participants have difficulties with arithmetic compared to 2.6% of their counterparts ($P < 0.001$). Moreover, the proportion of participants eligible for CMU-c coverage is three times

Table 2 Socioeconomic and health characteristics of participants having forgone health care and their counterparts in France, CONSTANCES study, France, 2016

	Forgoing $N = 12,363$	Not forgoing $N = 75,546$	p value
Socioeconomic characteristics			
Mean age (Q1, Q3), years	46 (38; 58)	48 (39; 61)	< 0.001
Occupational status, %			< 0.001
Agricultural, fishery and forestry workers	0.1	0.1	
Self-employed	1.9	1.6	
Managers and professionals	14.2	31.4	
Technicians and associate professionals	24.6	28.3	
Others employees	33.1	20.5	
Manual laborers	13.2	8.3	
Never worked	1.0	1.1	
Other	12.1	8.7	
Monthly household income ≤ 1000 €, %	10.8	3.0	< 0.001
Missing data	1.3	1.1	
CMU-c coverage, %	10.4	2.9	< 0.001
Socially disadvantaged[a], %	21.4	7.6	< 0.001
Met with social worker	8.8	1.9	< 0.001
Difficulty reading	9.6	4.0	< 0.001
Difficulty writing	5.9	2.0	< 0.001
Difficulty with arithmetic	7.5	2.6	< 0.001
No internet access	9.2	4.9	< 0.001
Missing data	0.5	0.4	
Living as couple, %	62.2	75.3	< 0.001
Missing data	1.5	1.3	
Health characteristics			
Men %	40.3	48.0	< 0.001
Body mass index, %			< 0.001
Underweight	2.9	2.5	
Normal weight	47.0	54.8	
Overweight	31.2	30.4	
Obesity	17.4	11.1	
Unknown	1.5	1.3	
Smoker status, %			< 0.001
Non-smoker	37.6	48.0	
Current smoker	30.3	17.4	
Former smoker	32.1	34.6	
Missing data	4.1	3.8	
Severe alcohol use[b] %	15.9	16.2	0.448
≥ 1 CAD risk factor %	20.0	18.4	0.003
Diabetes	5.6	3.4	< 0.001
Hypertension	12.3	11.8	0.08
Dyslipidemia	8.4	9.0	0.028
Missing data	2.0	1.6	
History of CAD disease[c] %	4.1	3.4	< 0.001
Missing data	2.3	1.8	
History of respiratory disease[d] %	12.9	9.6	< 0.001
Missing data	3.3	2.6	
Activity limitations due to health problems %	23.2	11.2	< 0.001
History of depression %	28.1	15.4	< 0.001
Missing data	2.0	1.7	

Table 2 continued

	Forgoing $N = 12{,}363$	Not forgoing $N = 75{,}546$	p value
History of cancer %	6.3	6.8	0.038
Missing data	2.6	2.2	

Underweight: BMI $\leq$ 18.5 kg/m^2. Normal weight: 18.5 $<$ BMI $\leq$ 25 kg/m^2. Overweight: 25 $\leq$ BMI $\leq$ 30 kg/m^2. Obesity: BMI $\geq$ 30 kg/m^2

CAD cardiovascular disease

[a]Socially disadvantaged: at least one problem among the following: difficulties with reading, writing or arithmetic; meeting with a social worker in the last year; no internet access

[b]Harmful or severe risk assessed through alcohol use disorders identification tool (AUDIT) screening tool

[c]Cardiovascular disease: myocardial infarction, stroke, ischemic cardiopathy

[d]History of respiratory disease: asthma, COPD history

higher in the group who report having forgone health care (21.4% vs. 7.6%, $P < 0.001$).

Health characteristics Participants who report having forgone health care have a higher prevalence of reporting a history of depression (28.1% vs. 15.4%, $P < 0.001$), respiratory disease (12.9% vs. 9.6%, $P < 0.001$), diabetes and CAD, than their counterparts (Table 1). Also, the rate of forgoing participants having activity limitations due to health problems is more than twice as high and the smoking prevalence rate almost twice as high as that of their counterparts (Table 2).

In addition, we assessed the association between the reporting of forgone health care and socioeconomic determinants of healthcare use (Table 3). The odds of forgoing health care are highest for those participants with low occupational status (manual laborer OR = 2.92; 95% CI 2.62, 3.18) and for those with (CMU-c) coverage (2.18;95% CI 1.92, 2.29). Men have lower odds of forgoing care compared to women (OR = 0.77; 95% CI 0.74, 0.81). Obesity (body mass index $\geq$ 30 kg m^{-2}) is also associated with higher odds of forgoing care (1.54; 95% CI 1.44, 1.64) even after adjusting for socioeconomic and health characteristics. In contrast, participants from inclusion centers in smaller cities (less than 50,000 inhabitants) have lower odds of forgoing care (0.66; 95% CI 0.62, 0.70).

Discussion

Participants who report having forgone health care do not have higher odds of a hospital admission; yet they do have lower odds of consulting GPs, especially specialist physicians in CBAC and higher odds of visiting the ED. These findings are consistent with other studies on healthcare utilization of socially disadvantaged populations (Tuppin et al. 2011; Feral-Pierssens et al. 2018; Devaux and de Looper 2019). They support the claim that the perception of those who report having forgone health care for financial reasons, under French UHI, is consistent with their lower actual use of CBAC.

With lower odds of consulting physicians in CBAC and higher odds of visiting ED, our study supports the notion that EDs might partially replace GPs and specialists for populations that forgo seeking health care in CBAC. Since overcrowding of EDs results in negative health effects, increasing upstream access to CBAC by reducing the prevalence of individuals forgoing care has become an important goal of French health policy. Given the rise of chronic conditions such as CAD and respiratory disease, access to appropriate specialist physicians, unimpeded by financial barriers, is important to manage these conditions with prescription drugs and referral for specific medical and surgical interventions.

Despite recognition that the healthcare system, in France, ought to be more effectively managed to assure that chronic conditions are diagnosed in a timely manner and that patients are followed in appropriate healthcare networks (Rodwin and Le Pen 2004), there is little understanding of the extent to which patients who report having forgone health care actually forgo visits to cardiologists and pneumologists. Yet, based on our results, they have lower odds of visiting these specialists. In addition, women who forgo medical care have lower odds of consulting gynecologists, which suggests that they may not adhere to standard disease prevention guidelines, birth control, maternal and child health services and cancer screening (Simard et al. 2012).

In our study, the prevalence of low-income and socially deprived participants was higher among those who reported to have forgone care. It is well known that access barriers to care are higher among low-income individuals

Table 3 Multivariable logistic regression results for those reporting to have forgone health care and their association with participants' characteristics, CONSTANCES study, France, 2016

	OR	95% CI
Socioeconomic status		
Sex		
Female	1	
Male	0.77	0.74–0.81
Socially disadvantaged[a]	1.96	1.84–2.09
Occupational status		
Managers and professionals	1	
Other employees	2.80	2.61–3.00
Manual laborers	2.92	2.67–3.18
CMU-c coverage	2.10	1.92–2.29
City size of the inclusion center		
> 400,000 inhabitants	1	
[150,000; 400,000]	0.83	0.78–0.88
[50,000; 150,000]	0.75	0.71–0.80
< 50,000 inhabitants	0.66	0.62–0.70
Health characteristics		
BMI		
Normal weight	1	
Overweight	1.26	1.20–1.32
Obesity	1.54	1.44–1.64
Smoking status		
Non-smoker	1	
Current smoker	1.81	1.71–1.92
Former smoker	1.23	1.17–1.30
Alcohol use		
Normal consumption	1	
Excess	1.31	1.14–1.50
Addiction	1.22	1.05–1.41
Activity limitations due to health problems	1.63	1.54–1.73
Cardiovascular diseases (CAD) risk	1.06	0.99–1.12
History of CAD	1.12	0.99–1.27
History of respiratory disease	1.18	1.11–1.26
History of depression	1.57	1.49–1.66

Underweight: BMI $\leq$ 18.5 kg/m^2. Normal weight: 18.5 < BMI $\leq$ 25 kg/m^2. Overweight: 25 $\leq$ BMI $\leq$ 30 kg/m^2. Obesity: BMI $\geq$ 30 kg/m^2

[a]We define "socially disadvantaged" as having at least one problem among the following: difficulties with reading, writing or arithmetic; meeting with a social worker in the last year; no internet access

(Guessous et al. 2012; Gusmano et al. 2014; Madureira-Lima et al. 2018; Stirbu et al. 2011). Racial and ethnic minorities face access barriers to health care even when they are insured (Sommers 2015). Moreover, there is evidence that forgoing health care is associated with low comprehensive health literacy, low health system responsiveness and provider behavior (Despres et al. 2011). These findings are important when one considers that individuals forgoing health care are associated with worse outcomes, in France, as well as in other countries (Bazin et al. 2005). They reinforce the importance of social determinants of health as factors associated with patients who forgo health care (Guessous et al. 2012; Bodenmann et al. 2014).

Our finding that participants from inclusion centers in cities with smaller populations (< 50,000) are associated with lower odds of forgoing health care could reflect the fact that French specialists who "extra-bill" are concentrated in France's three largest cities: Paris, Lyon and Marseille (Inspection Générale des Affaires Sociales 2007). This leads socially disadvantaged populations to forgo health care if they cannot afford to pay the associated OOP payments.

We should emphasize that our study focused on financial barriers in forgoing health care even though there are many other barriers—level of education, linguistic, cultural or provider density (Gusmano et al. 2014; Sørensen et al. 2015; Despres et al. 2011). We are therefore unable to answer the question of whether patient perceptions of unmet needs and lower use of health care could be resolved simply by improving financial coverage: broadening the benefit package and reducing the extent of OOP payment under France's UHI.

Our results indicate that patients who report having forgone health care for financial reasons, under French UHI, experienced a pattern of lower health services utilization for CBAC. This suggests that the question on forgoing health care used in the CONSTANCES survey passes the internal validity test, and could be used in future studies to estimate financial barriers to health care. Although lower healthcare use is not synonymous with unmet need, and we have no clinical data to assess the health effects of those who report forgone health care and use less CBAC, information from such surveys may, nevertheless, serve as a tool to analyze access barriers for specific populations or in specific healthcare settings.

Limitations

One limitation of all data collected through the survey of CONSTANCES participants is the problem of recall lapses or differences in interpretation of the questions both of which lead to bias. However, we are not aware of other datasets on self-reported forgone health care that avoid these limitations. Moreover, we included other socioeconomic and health status indicators (from SNDS records), which are not subject to over- or under-reporting and limit potential bias. The prevalence of individuals who report having forgone health care is established by self-reporting associated with the personal assessment of unmet needs. These perceptions also depend on other determinants such

as health literacy, health system responsiveness and provider behavior (Sørensen et al. 2015).

Data concerning participants' subscription to private complementary health insurance were not available at cohort inclusion. However, we analyzed data focusing on participants' socioeconomic status (SES) and CMU-c coverage. These are major drivers of social inequities in access to health care in France. Moreover, health literacy is weaker among socially disadvantaged populations, which could result in fewer efforts to seek adequate health care, hence a lower propensity to report forgoing care (Sørensen et al. 2015).

Finally, patients excluded from our study because they did not answer the question about forgoing health care have lower SES and greater health risks. The combination of a lower propensity to report forgoing care and missing data on the higher-risk population may have resulted in our underestimating the prevalence of forgoing care and its association with the actual use of health care.

Conclusion

Our study demonstrates that reported forgone care corresponds to lower actual use of community-based ambulatory care. Moreover, our results indicate that the characteristics of those who forgo health care are strongly associated with social determinants of health. Thus, our study offers a cautionary note for policymakers concerned with improving access to health care for disadvantaged populations. Although extending health insurance coverage may be necessary to improve healthcare access, it is hardly sufficient. Policymakers should consider targeted strategies to improve access to GPs and specialist physicians in CBAC for disadvantaged populations who report having forgone health care for any reason. Finally, physicians should be made aware of these issues when interacting with vulnerable patients. It could help them to initiate specific conversations on patients' actual healthcare access and possible alternatives to forgoing health care.

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Compliance with ethical standards

Conflict of interest SC holds shares of MyGoodLife®. The other authors declare no competing interests.

Ethical approval and Informed consent We follow the STROBE recommendations for reporting observational cohort studies. Our analyses used Stata version 14.0 (StatCorp Ltd, College Station, USA). The CONSTANCES study was approved by the *Comité Consultatif pour le Traitement des Informations Relatives à la Santé* (CCTIRS) and the *Commission Nationale Informatique et Liberté* (CNIL). All participants signed an informed consent form.

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